

Karlsruhe, 11 July 2012

Updated nuclide chart – Enhanced knowledge of the elements' radioactivity

An updated edition of the "Karlsruhe nuclide chart" has been published today by the Joint Research Centre's Institute for Transuranium Elements (JRC-ITU). This chart is an extended periodic table of the elements displaying all known atoms of any element and their radioactive data. The 8th edition contains new and updated radioactive decay data on 737 nuclides not available in the previous edition, dating from 2007. In total, nuclear data on 3847 nuclides are presented. An explanatory booklet is available in English, German, French, Spanish, Chinese and Russian. This publication supports the JRC's particular focus on the education and training of present and future scientists and engineers in the nuclear domain, as demanded by the Euratom Treaty.

The term "nuclide" categorises atoms by the number of protons and neutrons in its nucleus. Nuclide charts offer a full description of the radioactive attributes of an element and its known isotopes, providing a unique overview of current knowledge in nuclear science.

Since its first edition in 1958, the Karlsruhe nuclide chart has provided scientists and students with structured, accurate information on the half-lives and decay modes of radionuclides, as well as the energies of emitted radiation.

This new edition includes the new element names copernicium (symbol Cn element 112), flerovium (symbol Fl, element 114) and livermorium (symbol Lv, element 116), as recently approved by the International Union of Pure and Applied Chemistry (IUPAC). It also provides the most recent values of the atomic weights and isotopes abundances and other various nuclear parameters.

Beyond the more traditional physical sciences such as health physics and radiation protection, nuclear and radiochemistry, and astrophysics, the chart is also widely used in the life and earth sciences (biology, medicine, agriculture, geology, etc.).

Due to the chart's great didactic value, it has been used in training programmes worldwide and is a valuable and welcome addition to many books on nuclear science including school physics textbooks.

JRC's role on nuclear research and training

The overarching goal of the nuclear research carried out by the JRC is to provide scientific and technical support to EU policy makers in the field of nuclear safety and security. In particular, the nuclear activities of the JRC aim at satisfying the research and development obligations of the Euratom Treaty and support both European Commission and Member States in the fields of safeguards and non-proliferation, waste management, safety of nuclear installations and fuel cycle, radioactivity in the environment and radiation protection.

The JRC also aims to improve scientific knowledge in the nuclear field and provides support to policy options for the energy mix of the 21st century. Last but not least, there is also a particular focus on education and training, as demanded by the Euratom Treaty.



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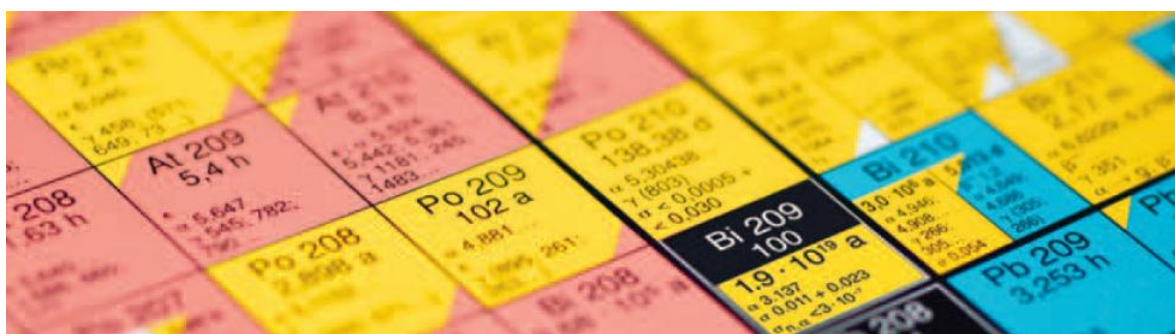
These efforts are particularly relevant in support of harmonising access to knowledge among all EU and neighbouring countries. To underpin this work, the JRC promotes and contributes to the creation and dissemination of comprehensive sources of reliable nuclear information and organises regular trainings on the nuclear field.

For instance, the JRC organises training on operational issues in radioactive waste management and nuclear decommissioning. It has also set up the European Security Training Centre (EUSECTRA) to provide nuclear and radiological security related training and to support and complement such activities at the national level. EUSECTRA provides hands-on training on the process of detecting nuclear materials and the use of various types of detection equipment and emergency response in case of incidents when radioactive materials have been used.

The electronic version of the Karlsruhe nuclide chart is available at the Nucleonica science portal: <http://www.nucleonica.com>

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